

supplies of food and covering to a sufficiently elevated bivouac, and those presented by the mountain itself. The former of course will be overcome as the country is opened up, but it is evident that Mount Cook is equal in difficulty to most of the first class Alpine peaks. Mr. Green first attacked it by the southern ridge, but, after reaching a height of 7500 feet, found that route impracticable. An attempt was then made to reach the north-eastern face of the mountain by a route which also had to be abandoned. Mr. Green then mounted by a ridge on the left bank of the Hochstetter Glacier, and, after bivouacking at a height of about 7000 feet, succeeded in attaining the summit by a circuitous and difficult climb near the ridge connecting Mount Cook with Mount Tasman. His usual ill-fortune pursued him. The weather was bad, as it seems often to be in these parts—and the approach of night compelled him to return without actually setting his foot on the very highest point. The ascent however was practically accomplished, only a slight detour to avoid a crevasse and a little more plodding along a snow ridge remained; but even the quarter of an hour or twenty minutes which this would have added to the expedition could not be spared. The summit of Mount Cook is not the place on which to spend a night in bad weather, nor is it a peak which can be descended in the dark. As it was, notwithstanding their utmost exertions, the travellers were compelled to halt for the night at an elevation of some 10,000 feet above the sea, on a ledge so dangerous that they dared not sleep—even one at a time!

Mr. Green afterwards visited the neighbourhood of Mount Earnslaw, a high peak south of Haast Pass, but his usual ill-fortune pursued him, and the weather prevented him from doing more than make a reconnaissance.

We lay down this volume with regret that the Fates were not kinder to Mr. Green in giving him the opportunity of writing a longer tale of adventure. He tells his story so well and pleasantly that we regret he could not carry further his explorations of New Zealand peaks and glaciers. He is evidently a close observer and devoted student of nature, so that without any attempt at book-making he has contrived to incorporate with his narrative many interesting facts relating to the natural history and physiography of these remarkable islands, which raises his work far above the level of an ordinary book of travel.

T. G. BONNEY

DOBSON'S "MONOGRAPH OF THE INSECTIVORA"

A Monograph of the Insectivora, Systematic and Anatomical. By G. E. Dobson, M.A., F.R.S. Parts I. and II. 4to. Pp. 1-172, 22 Plates. (London: Van Voorst, 1882-83.)

THE Insectivora constitute an order of Mammals at the same time but little known and of great scientific interest. Until recently they were not considered an attractive group. Small in size, shy and retiring in habits, difficult of capture, none of them of commercial value or capable of domestication, they have received little notice even from professed zoologists, and to the general public their existence, except in the case of two or three of the commonest species, has been almost un-

known. The fact, however, on which Prof. Huxley insisted many years ago, in his lectures at the College of Surgeons, that in this order we find some of the most generalised members of the Eutherian or placental Mammals, little-modified representatives of what appear to be ancestral forms, whose study is an excellent introduction to a knowledge of the more modified or specialised members of the class, has done much to elevate them in the eyes of naturalists who are seeking the key to unlock the history of the evolution of the Mammalia. Mr. Dobson, whose excellent work in the Chiroptera is familiar to all zoologists, has done well then to take up the Insectivora, and to give us, for the first time, a thoroughly reliable and exhaustive monograph upon them.

Aided by wisely-bestowed grants from the Government Fund administered by a committee of the Royal Society, and with the assistance of numerous scientific friends, he has been enabled to collect abundant materials, and publish the results of his investigations in a copiously illustrated form. To facilitate comparison and avoid repetition, Mr. Dobson commences with a detailed account of the anatomy, paying especial attention to the myology, of two species, *Gymnura rafflesii* and *Erinaceus europæus*, which have been selected, the former as the nearest representative of an undifferentiated Eutherian, and the latter as being a well-known species, easily obtainable for examination. With these the anatomy of the species subsequently described is compared and contrasted. With regard to the general classification of the group, a knowledge of which can of course only be obtained from a thorough examination of their structure, Mr. Dobson has wisely reserved his views until the work is completed, adopting provisionally that which has been gradually elaborated by Peters, Mivart, and Gill.

The two first parts of the work already issued contain the families *Erinaceidae*, *Centetidae*, *Solenodontidae*, *Potamogalidae*, *Chrysochloridae*, and *Talpidae*, each family, genus, and species being treated of fully, both anatomically and zoologically. The difficult group *Soricidae*, as well as the *Macroscelidae*, *Tupaiidae*, and the aberrant *Galeopithecidae*, will form the subject of the third and concluding part. If this part should be, as we have every reason to believe it will, equal to its predecessors in thoroughness of detail and beauty of illustration, we shall have a work which will do great credit to its author, and rank among those solid contributions to knowledge which form landmarks in the progress of science.

W. H. FLOWER

OUR BOOK SHELF

Manual of Mathematical Tables. By the Rev. J. A. Galbraith and the Rev. S. Haughton, F.R.S. (London: Cassell, Petter, and Galpin.)

"Now what so pleasing can there be, if a man be mathematically given, as to calculate or peruse Napier's logarithms, or those tables of artificial sines and tangents, not long since set out by mine old collegiate, good friend, and late fellow-student of Christchurch in Oxford, Mr. Edmund Gunter, which will perform that by addition and subtraction only which heretofore Regiomontanus's tables did by multiplication and division?" We shall not take up the cudgels against quaint old Burton, but will simply say that, for those to whom the subject is a "pleasing" one, here is an exceedingly handy and neatly got up

manual, whose *raison d'être* is justified by its having reached a fourth edition. If our readers are "philosophers," they will not require an account of what logarithms are (see Mr. Glaisher's excellent description in the "Encyclopædia Britannica," vol. xiv.); if they are not, with Mr. Squeers we say, "Then I am sorry for you, for I sha'n't be able to explain them."

The tables, are in the main, five-figure tables, except that the logarithms of 1001 to 1100 are given to seven places, and in the case of the logarithms of numbers extend to the logarithm of 10000. The other tables are logarithms of sines and tangents to every minute of the quadrant, and Gauss's sum and difference logarithms. Besides, there are a capital introduction, tables of useful constants with their logarithms, and solutions, by trigonometrical tables, of quadratic and cubic ($x^3 \pm px \pm q = 0$) equations. There are no tables of natural sines and tangents. We have no hesitation in commending these tables to a still wider public than they have already reached.

R. T.

Principles of Theoretical Chemistry. By Ira Remsen. (Philadelphia: H. C. Lea's Son and Co., 1883.)

UNFORTUNATELY for some years past we have been treated with an immense number of "books" on chemistry in England of a most mechanical type: books in which no reasoning theory is apparent. A dry epitome of facts in a most unpalatable shape, embellished here and there with formulæ of various kinds, graphic, symbolic, empiric, or glyptic, but in very rare cases any attempt at showing the learner, easily, how these ideas of chemical constitution, represented by formulæ, are clearly arrived at. If a student is unable to see, in his mind, how the formula H_2SO_4 represents a knowledge of the constitution of sulphuric acid, he had much better only know its percentage composition, as it may otherwise lead him wrongly.

From the style of the present work, and some others we have recently seen from the other side, our cousins are taking up chemistry in a more philosophic manner than ourselves. And it is easy to see whence this view comes. Considering that we own a Dalton it is strange that the development of chemical theories is so lightly treated in English text-books. Are English students so superficial or so under the domination of *Exams.* that a work like Kopp's "Entwicklung" is too much for them?

This very condensed little work, just over 200 pages, is intended for somewhat advanced students who have a basement of facts to build upon. It commences with a general discussion of atoms and molecules, which is continued in a very simple and clear manner, with the exception of a few *newish* words like *chemism*. The chapters on atoms and molecules and on valency are about as clear and simple as they can be made, and the same may be said in regard to the opening chapter on carbon compounds. The author has evidently a reasonable notion of the value and permanence of a chemical theory, and no exception can be taken to the manner of discussion or expression. Speaking, for instance, of Avogadro's hypothesis, the author says: "It is at present almost universally accepted by chemists, some, indeed, going so far as to speak of it as a *law*." It is certainly one of the best additions to the list of *small* chemical books that has been made for some time.

Studies in Micrographic Petrography. (Ady and Hensoldt, 7, Muchell Road, Nunhead, S.E.)

THE growing interest taken in this country in the study of petrography is well shown by the rapidly increasing facilities offered for the prosecution of this branch of science. The most recent of these has just appeared under the foregoing title. It is to consist of the issue of two dozen microscopic slides of characteristic minerals and rocks prepared by Mr. Hensoldt of Wetzlar, with illustrative

drawings and descriptive text by Mr. J. E. Ady, who is already favourably known for his microscopic preparations of British rocks. The first number of the "Studies" is devoted to "*Eozoon*, Led Beg, Sutherland." It contains two lithographic plates illustrative of the so-called eozoal structure of a limestone in the north of Scotland, and four pages of descriptive text. The author gives a brief reference to the literature of the subject, and an account of the microscopic structure of some portions of the limestone in question, which he regards as akin to that of the Canadian *Eozoon*, but as being of inorganic origin. We are afraid his sketch is too slight to have much weight in the controversy regarding *Eozoon*. His effort to extend the opportunities of petrographical investigation, however, and to popularise this fascinating but difficult branch of geology is praiseworthy, and we hope that his "Studies" may meet with such success as may induce him to continue them.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

The Remarkable Sunsets

THE numbers of NATURE for October, which are the latest to be seen here at this date, contain in the correspondence accounts of the green appearance of the sun in India. Some solar phenomena observable at present and during the whole of the past month are probably related to these, and yet are sufficiently distinct to deserve a separate description. They have, indeed, attracted the attention of everybody here by their novelty and spectacular magnificence, and to some have an ominous significance in connection with recent seismic disturbances.

In November and December we have in this part of Japan a remarkably clear atmosphere, and this year has proved no exception. The great snow-capped mountain, Fujii, some ninety miles away to the west, is beautifully defined to view both at sunrise and sunset on most days, although during the greater part of the year—the warmer part that is—it is rare to catch a glimpse of it.

The phenomena of which I wish to record a description occur every day before and after sunset and sunrise, and serve to materially lengthen our day. In this latitude, although not in the tropics, the shortness of the twilight is very noticeable as compared with that of England, but at present at least an hour and a half elapses between the moment of sunset and that of the disappearance of the last of its rays, and this, with the same time between dawn and sunrise, causes our day to be very appreciably lengthened.

On some days there is round the sun, even while it is still high, a considerable area of silvery glare, 40° to 50° in diameter, and bordered by a lurid reddish-brown or purplish-brown halo. A similar lurid turbidity lies in the horizon, and as the sun descends the halo blends with this below, while above the sun it attenuates and disappears, the silvery glare remaining undiminished. When the sun sets there is still a nearly circular area of this intense glare with a diameter of about 12° . On other days there is before sunset only a thin silvery light round the sun diffusing away from it, and only about and after the setting is the more defined area of strong light strikingly visible, and on these days the horizon also shows little of the dull redness mentioned above. Besides the above peculiarities, the sun preserves its whiteness much more than usual, so as to be only golden orange when setting.

Now follow the more remarkable phenomena. The white glare, or patch of silvery light, gradually sets, spreading out along the horizon as it does so, and passing through the sunset colours until little more than a red line one or two degrees deep remains. This happens at about twenty minutes after sunset. At this moment, on the gray curtain of twilight appears a white luminosity, which rapidly intensifies over the sunset, and shades away over almost half the visible hemisphere. The brightness